What is claimed is:

Sub a3

1. An artificial interbody spinal implant for insertion at least in part across a disc space between adjacent vertebral bodies of a human spine, the vertebral bodies having an anterior aspect and a posterior aspect, said implant comprising:

a leading end for insertion first into the disc space, a trailing end opposite said leading end, and therebetween a length along a mid-longitudinal axis of said implant, said leading end being asymmetrical;

opposed portions between said leading and trailing ends adapted to be placed within the disc space to contact and support the adjacent vertebral bodies, said opposed portions being non-arcuate along at least a portion of the length of said implant, said implant being formed at least in part of a material other than bone, said material comprising at least one of surgical quality titanium and its alloys, cobalt chrome alloy, tantalum, any metal or alloy suitable for the intended purpose, any ceramic material suitable for the intended purpose, and any plastic or composite material suitable for the intended purpose;

an interior facing side wall, an exterior facing side wall opposite said interior side wall, and a width therebetween, said width of said implant being less than approximately one-half of the maximum width of the adjacent vertebral bodies into which said implant is adapted to be inserted, said interior and exterior side walls being between said opposed portions and said leading and trailing ends, said interior side wall adapted to be oriented toward another implant when inserted within the disc space;

a first distance as measured from said leading end to a plane perpendicular to and bisecting the length along the mid-longitudinal axis of said implant that is greater than a second distance as measured from said perpendicular plane to the junction of said leading end and said exterior side wall; and

a third distance as measured from the junction of said leading end and said interior side wall to a plane perpendicular to and bisecting the length along the mid-longitudinal axis of said implant that is greater than said second distance.

2. The implant of claim 1, wherein said first distance is greater than said third distance.

3. The implant of claim 1, wherein said first distance is less than said third distance.

4. The implant of claim 1, wherein said first distance and said third distance are approximately equal.

5. The implant of claim 1, wherein said third distance is substantially greater than said first distance.

6. The implant of claim 1, wherein said leading end is at least in part non-linear.

7. The implant of claim 1, wherein at least a portion of said leading end is tapered from opposed portion to opposed portion for facilitating insertion of the implant between the two adjacent vertebral bodies.

8. The implant of claim 1, wherein less than half of said leading end is along a line perpendicular to the mid-longitudinal axis of said implant in a plane dividing said implant into an upper half and a lower half.

9. The implant of claim 1, wherein more than half of said leading end is a contour that goes from the exterior side wall toward the mid-longitudinal axis of said implant in a plane dividing said implant into an upper half and a lower half.

10. The implant of claim 1, wherein said leading end includes a curve that extends from said exterior side wall beyond the mid-longitudinal axis of said implant.

11. The implant of claim 1, further comprising at least one protrusion extending from at least one of said opposed portions for engaging at least one of the adjacent vertebral bodies to maintain said implant within the disc space.

12. The implant of claim 11, wherein said protrusion comprises a ridge.

13. The implant of claim 1, further comprising a plurality of surface roughenings for engaging the adjacent vertebral bodies and for maintaining said implant in place, said surface roughenings being present on at least a part of said opposed portions.

14. The implant of claim 1, wherein said opposed portions have a porous surface.

15. The implant of claim 1, wherein said opposed portions have a bone ingrowth surface.

16. The implant of claim 1, wherein said implant has surface protrusions configured to protrude into bone.

17. The implant of claim 1, wherein said implant material is porous.

18. The implant of claim 1, in combination with a fusion promoting material other than bone.

19. The implant of claim 1, wherein said implant comprises a bone ingrowth material other than bone.

20. The implant of claim 1, further comprising a material that intrinsically participates in the growth of bone from one of the adjacent vertebral bodies to the other of the adjacent vertebral bodies.

21. The implant of claim 1, wherein said implant is treated with a fusion promoting substance.

22. The implant of claim 21, wherein said fusion promoting substance is bone morphogenetic protein.

23. The implant of claim 1, wherein said implant material is stronger than cancellous bone.

24. The implant of claim 1, wherein said implant material is stronger than cortical bone.

25. The implant of claim 1, wherein at least a portion of said implant is bioresorbable.

26. The implant of claim 1, further in combination with bone morphogenetic protein.

27. The implant of claim 1, further in combination with an osteogenic material.

28. The implant of claim 27, wherein said osteogenic material is a material other than bone.

29. The implant of claim 27, wherein said material is genetic material coding for the production of bone.

30. The implant of claim 27, wherein said material is bone morphogenetic protein.

31. The implant of claim 1, further in combination with genetic material coding for production of bone.

32. The implant of claim 1, wherein said implant has a maximum length less than and approximating the posterior to anterior depth of the vertebral body.

33. The implant of claim 1, wherein the trailing end is adapted to conform from side to side to at least a portion of the peripheral contour of at least one of the anterior and posterior aspects of the vertebral bodies adjacent a disc space into which said implant is inserted.

34. The implant of claim 1, wherein said opposed portions have at least one opening therein, said openings being in communication with one another to permit for the growth of bone from adjacent vertebral body to adjacent vertebral body through said implant

35. The implant of claim 34, wherein each of said opposed portions comprises an interior surface, said interior surfaces being spaced apart to define a hollow interior in communication with said openings.

36. The implant of claim 1, wherein at least a portion of said opposed portions are in a diverging relationship to each other from trailing end to leading end for allowing angulation of the adjacent vertebral bodies relative to each other.

37. The implant of claim 1, wherein at least a portion of said opposed portions are generally in a converging relationship to each other from trailing end to leading end for allowing angulation of the adjacent vertebral bodies relative to each other.

38. The implant of claim 1, further comprising a plurality of openings and passages for retaining fusion promoting substance.

39. The implant of claim 1, wherein said opposed portions are in moveable relationship to each other to allow for relative motion of the adjacent vertebral bodies after said implant is installed.

40. The implant of claim 1, wherein said implant is adapted for insertion from the posterior aspect of the vertebral bodies and said leading end is configured to conform to the anatomic contour of at least a portion of the anterior aspect of the vertebral bodies.

41. The implant of claim 1, wherein said implant is adapted for insertion from the anterior aspect of the vertebral bodies and said leading end is configured to conform to the anatomic contour of at least a portion of the posterior aspect of the vertebral bodies.

42, The implant of claim 1, wherein said implant is adapted for insertion from a first lateral aspect of the vertebral bodies and said leading end is configured to conform to the anatomic contour of at least a portion of a second lateral aspect of the vertebral bodies opposite the first lateral aspect.

43. An artificial interbody spinal implant for linear insertion at least in part across a disc space between adjacent vertebral bodies of a human spine, the vertebral bodies having an anterior aspect and a posterior aspect, said implant comprising:

a leading end for insertion first into the disc space, a trailing end opposite said leading end, and therebetween a length along a mid-longitudinal axis of said implant, said implant being non-threaded and adapted for linear insertion in a direction along the mid-longitudinal axis of said implant, said leading end being asymmetrical, less than half of said asymmetric leading end being along a line perpendicular to the mid-longitudinal axis of said implant in a plane dividing said implant into an upper half and a lower half;

opposed portions between said leading and trailing ends adapted to be placed within the disc space to contact and support the adjacent vertebral bodies, said opposed portions being arcuate along at least a portion of the length of said implant, said implant being formed at least in part of a material other than bone, said material comprising at least one of surgical quality titanium and its alloys, cobalt chrome alloy, tantalum, any metal or alloy suitable for the intended purpose, any ceramic material suitable for the intended purpose, and any plastic or composite material suitable for the intended purpose;

an interior facing side wall, an exterior facing side wall opposite said interior side wall, and a width therebetween, said width of said implant being less than approximately one-half of the maximum width of the adjacent vertebral bodies into which said implant is adapted to be inserted, said interior and exterior side walls being between said opposed portions and said leading and trailing ends, said interior side wall adapted to be oriented toward another implant when inserted within the disc space;

a first distance as measured from said leading end to a plane perpendicular to and bisecting the length along the mid-longitudinal axis of said implant that is greater than a second distance as measured from said perpendicular plane to the junction of said leading end and said exterior side wall; and

a third distance as measured from the junction of said leading end and said interior side wall to a plane perpendicular to and bisecting the length along the mid-longitudinal axis of said implant that is greater than said second distance.

44. The implant of claim 43, wherein said first distance is greater than said third distance.

45. The implant of claim 43, wherein said first distance is less than said third distance.

46. The implant of claim 43, wherein said first distance and said third distance are approximately equal.

47. The implant of claim 43, wherein said leading end is at least in part non-linear.

48. The implant of claim 43, wherein said third distance is substantially greater than said first distance.

49. The implant of claim 43, wherein at least a portion of said leading end is tapered from opposed portion to opposed portion for facilitating insertion of the implant between the two adjacent vertebral bodies.

50. The implant of claim 43, wherein said implant is adapted for insertion from the posterior aspect of the vertebral bodies and said leading end is configured to

conform to the anatomic contour of at least a portion of the anterior aspect of the vertebral bodies.

51. The implant of claim 43, wherein said implant is adapted for insertion from the anterior aspect of the vertebral bodies and said leading end is configured to conform to the anatomic contour of at least a portion of the posterior aspect of the vertebral bodies.

52. The implant of claim 43, wherein said implant is adapted for insertion from a first lateral aspect of the vertebral bodies and said leading end is configured to conform to the anatomic contour of at least a portion of a second lateral aspect of the vertebral bodies opposite the first lateral aspect.

53. The implant of claim 43, wherein more than half of said leading end is a contour that goes from the exterior side wall toward the mid-longitudinal axis of said implant in a plane dividing said implant into an upper half and a lower half.

54. The implant of claim 43, wherein said leading end ~~includes a curve~~ that extends from said exterior side wall beyond the mid-longitudinal axis of said implant.

55. The implant of claim 43, further comprising at least one protrusion extending from at least one of said opposed portions for engaging at least one of the adjacent vertebral bodies to maintain said implant within the disc space.

56. The implant of claim 55 wherein said protrusion comprises a ridge.

57. The implant of claim 45, further comprising a plurality of surface roughenings for engaging the adjacent vertebral bodies and for maintaining said implant in place, said surface roughenings being present on at least a portion of said opposed portions.

58. The implant of claim 43, wherein said opposed portions have a porous surface.

59. The implant of claim 43, wherein said opposed portions have a bone ingrowth surface.

60. The implant of claim 43, wherein said implant has surface protrusions configured to protrude into bone.

61. The implant of claim 43, wherein said implant material is porous.

62. The implant of claim 43, wherein said implant material is selected from the group including surgical quality titanium and its alloys, cobalt chrome alloy, tantalum, any metal or alloy suitable for the intended purpose, any ceramic material suitable for the intended purpose, and any plastic or composite material suitable for the intended purpose.

63. The implant of claim 43, in combination with a fusion promoting material other than bone.

64. The implant of claim 43, wherein said implant comprises a bone ingrowth material other than bone.

65. The implant of claim 43, further comprising a material that intrinsically participates in the growth of bone from one of the adjacent vertebral bodies to the other of the adjacent vertebral bodies.

66. The implant of claim 43, wherein said implant is treated with a fusion promoting substance.

67. The implant of claim 66, wherein said fusion promoting substance is bone morphogenetic protein.

68. The implant of claim 43, wherein said implant material is stronger than cancellous bone.

69. The implant of claim 43, wherein said implant material is stronger than cortical bone.

70. The implant of claim 43, wherein at least a portion of said implant is bioresorbable.

71. The implant of claim 43, further in combination with bone morphogenetic protein.

72. The implant of claim 43, further in combination with an osteogenic material.

73. The implant of claim 72, wherein said osteogenic material is a material other than bone.

74. The implant of claim 72, wherein said material is genetic material coding for the production of bone.

75. The implant of claim 72, wherein said material is bone morphogenetic protein.

76. The implant of claim 43, further in combination with genetic material coding for production of bone.

77. The implant of claim 43, wherein said implant has a maximum length less than and approximating the posterior to anterior depth of the vertebral body.

78. The implant of claim 43, wherein said trailing end is adapted to conform from side to side to at least a portion of the peripheral contour of at least one of the

anterior and posterior aspects of the vertebral bodies adjacent a disc space into which said implant is inserted.

79. The implant of claim 43, wherein said opposed portions have at least one opening therein, said openings being in communication with one another to permit for the growth of bone from adjacent vertebral body to adjacent vertebral body through said implant

80. The implant of claim 79, wherein each of said opposed portions comprises an interior surface, said interior surfaces being spaced apart to define a hollow interior in communication with said openings.

81. The implant of claim 43, wherein at least a portion of said opposed portions are in a diverging relationship to each other from trailing end to leading end for allowing angulation of the adjacent vertebral bodies relative to each other.

82. The implant of claim 43, wherein at least a portion of said opposed portions are generally in a converging relationship to each other from trailing end to leading end for allowing angulation of the adjacent vertebral bodies relative to each other.

83. The implant of claim 43, further comprising a plurality of openings and passages for retaining fusion promoting substance.

84. The implant of claim 43, wherein said opposed portions are in moveable relationship to each other to allow for relative motion of the adjacent vertebral bodies after said implant is installed.

85. A method for installing an interbody spinal implant into a disc space formed across a spinal disc and into vertebral bodies adjacent the spinal disc, said method comprising the steps of :

providing an artificial interbody spinal implant a leading end for insertion first into the disc space, the leading end being adapted to allow for the seating of the implant on at least one of the anterior and posterior portions of the apophyseal rim bone area without at least a portion of the implant proximate the leading end substantially extending beyond the outer dimensions of the vertebral bodies, a trailing end opposite the leading end, and therebetween a length along a mid-longitudinal axis of the implant, opposed portions between the leading and trailing ends adapted to be placed within the disc space to contact and support the adjacent vertebral bodies, the implant being formed at least in part of a material other than bone, the material comprising at least one of surgical quality titanium and its alloys, cobalt chrome alloy, tantalum, any metal or alloy suitable for the intended purpose, any ceramic material suitable for the intended purpose, and any plastic or composite material suitable for the intended purpose; and

installing the implant with at least the leading end of the implant positioned in contact with the bone proximate and including at least one of the anterior and posterior portions of the apophyseal rim area of the vertebral bodies.

86. The method of claim 85, wherein the providing step includes the sub-step of providing the implant having an interior facing side wall, an exterior facing side wall opposite the interior side wall, and a width therebetween, the width of the implant being less than approximately one-half of the maximum width of the adjacent vertebral bodies

into which the implant is adapted to be inserted, the interior and exterior side walls being between the opposed portions and the leading and trailing ends, the interior side wall being adapted to be oriented toward another implant when inserted within the disc space, the junction of the exterior side wall and the leading end being adapted so as not to substantially extend beyond the outer dimensions of the vertebral bodies when inserted within the disc space.

87. The method of claim 86, wherein the providing step includes the sub-step of providing the implant having a first distance as measured from the leading end to a plane perpendicular to and bisecting the length along the mid-longitudinal axis of the implant that is greater than a second distance as measured from the perpendicular plane to the junction of the leading end and the exterior side wall, and a third distance as measured from the junction of the leading end and the interior side wall to a plane perpendicular to and bisecting the length along the mid-longitudinal axis of the implant that is greater than the second distance.

88. The method of claim 87, wherein the providing step includes the sub-step of providing the implant with the first distance being greater than the third distance.

89. The method of claim 87, wherein the providing step includes the sub-step of providing the implant with the first distance being less than the third distance.

90. The method of claim 87, wherein the providing step includes the sub-step of providing the implant with the first distance and the third distance being approximately equal.

91. The method of claim 87, wherein the providing step includes the sub-step of providing the implant with the third distance being substantially greater than the first distance.

92. The method of claim 85, wherein the providing step includes the sub-step of providing the implant with the leading end being at least in part non-linear.

93. The method of claim 85, wherein the providing step includes the sub-step of providing the implant with less than half of the leading end being along a line perpendicular to the mid-longitudinal axis of the implant in a plane dividing the implant into an upper half and a lower half.

94. The method of claim 86, wherein the providing step includes the sub-step of providing the implant with more than half of the leading end being a contour that goes from the exterior side wall toward the mid-longitudinal axis of the implant in a plane dividing the implant into an upper half and a lower half.

95. The method of claim 86, wherein the providing step includes the sub-step of providing the implant with the leading end having a curve that extends from the exterior side wall beyond the mid-longitudinal axis of the implant.

96. The method of claim 85, wherein the providing step includes the sub-step of providing the implant with the trailing end being adapted to conform from side to side to at least a portion of the peripheral contour of at least one of the anterior and posterior aspects of the vertebral bodies adjacent a disc space into which the implant is inserted.

97. The method of claim 85, wherein the installing step includes the sub-step of inserting the implant from the posterior aspect of the vertebral bodies and the leading

end of the implant being configured to conform to the anatomic contour of at least a portion of the anterior aspect of the vertebral bodies.

98. The method of claim 85, wherein the installing step includes the sub-step of inserting the implant from the anterior aspect of the vertebral bodies and the leading end of the implant being configured to conform to the anatomic contour of at least a portion of the posterior aspect of the vertebral bodies.

99. The method of claim 85, wherein the providing step includes the sub-step of providing the implant with the opposed portions being arcuate.

100. The method of claim 85, wherein the providing step includes the sub-step of providing the implant with an overall length sufficient to contact both the area adjacent and including the anterior and posterior portions of the apophyseal rim area.

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